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Standard Guide for ~~Safety Performance Specification for~~ Fences for Baseball and Softball Fields¹

This standard is issued under the fixed designation F2000; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. ~~Scope~~

~~1.1 This guide provides recommended minimum requirements for various types of fences used in softball and baseball ballfields and other sports facilities, and practices for installation.~~

~~1.2 The values stated in inch-pound units are to be regarded as standard. The SI values given in parentheses are for information only.~~

~~1.3 This guide does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.~~

2. ~~Referenced Documents~~

~~2.1 ASTM Standards:²~~

~~A392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric~~

~~A491 Specification for Aluminum-Coated Steel Chain-Link Fence Fabric~~

~~A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment~~

~~F552 Terminology Relating to Chain Link Fencing~~

~~F567 Practice for Installation of Chain-Link Fence~~

~~F626 Specification for Fence Fittings~~

~~F668 Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric~~

~~F1043 Specification for Strength and Protective Coatings on Steel Industrial Fence Framework~~

~~F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures~~

~~F1183 Specification for Aluminum Alloy Chain Link Fence Fabric~~

~~F1345 Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric~~

~~F1664 Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence~~

~~2.2 CPSC Document:~~

~~CPSC Staff Recommendations~~

~~2.3 ASA and Other Ball Sports Associations:~~

~~Staff Recommendations~~

~~2.4 BOCA Document:~~

~~BOCA National Building Code/1993—12th Edition~~

~~2.5 NFPA Documents:³~~

~~Staff Recommendations~~

~~NFPA 70 National Electric Code (NEC)~~

~~2.6 ANSI/IEEE Document:⁴~~

~~ANSI/IEEE C2 National Electric Safety Code~~

¹ This guidespecification is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.10 on Specific Applications and Other Fence Systems and Components.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

3. Terminology

3.1 See Terminology **F552** for definitions of terms relating to chain-link fencing.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *fence, n*—a type of barrier that surrounds and deters balls, bats, and passage to or from the playing area.

3.2.2 *field, n*—the outdoor area that has been either designated, designed, constructed, or otherwise used for softball or baseball, or both.

3.2.3 *grade, n*—the finished elevation at any specified point of the ground or pavement outside or inside the playing area.

3.2.4 *outdoor, adj*—site located outside of a completely enclosed building or other structure.

4. Summary of Guide

4.1 This guide is based in part upon recommendations of the task groups concerned with baseball and softball of ASTM Committee F08.

4.2 This guide is directed to outfield fences, side and foul line fences, backstops, on-grade players benches and below grade players dugouts.

5. Significance and Use

5.1 This guide sets forth minimum standard requirements for use in local codes and ordinances relating to baseball and softball fencing.

5.2 This guide does not have the effect of law, nor is it intended to supersede local codes and ordinances of a more restrictive nature.

5.3 Studies, as listed in **Annex A1**, have been referenced as the basis for certain recommendations in this guide and will assist those who intend to provide protection against injuries or fatalities associated with anticipated thrown or batted balls and bats as well as passage to or from a baseball or softball field. This would include, but not be limited to, state and local governments, model code organizations, building code groups, and consumers. It is understood that the format will vary depending upon the specific use and local conditions.

5.4 Articles and studies have noted that fencing for baseball and softball sports, or both, should exist for baseball and softball sports outfields, backstops, sidelines, players on-grade benches, below-grade dugouts, and spectator seating.

6. Dimensions and Materials

6.1 *Permanent Outfield Fence:*

6.1.1 *Height*—The top of the fence shall be a minimum of 96 in. (2.4 m) above grade measured on the side of the fence that faces away from the ballfield (see **3.2.3** for the definition of *grade* specific to this guide). The height is to be such that players in the outfield can safely attempt to catch a fly ball without impaction on the kidneys, back, or head. However, in circumstances where it is necessary to protect people or objects outside the fences, the height should be increased accordingly. Top rail padding systems may also be used. A mid rail is not needed, in accordance with Specification **F668**.

6.1.2 *Ground Clearance*—The maximum vertical clearance between grade and the bottom of the fence shall be no more than a 1 in. (25.4 mm) reveal or space, measured on the side of the fence that faces the ballfield, to avoid entrapment of feet.

6.1.3 *Panels*—Solid barriers and safety padding that does not have openings, such as plastic, plywood, or canvas, shall not contain indentations or protrusions, except for normal construction tolerances and joints. Such indentations shall not be deeper than 0.375 in. (9.5 mm) and should be flush facing the ballfield.

6.1.4 *Horizontal and Vertical Members*—Where the fence is composed of horizontal and vertical members, the structural members shall be located on the side opposite of the play environment to prevent encountering the member. The spacing between the vertical or horizontal members shall not exceed 1¾ in. (4.44 cm). If of a lattice design, the members shall be diagonal.

6.1.5 *Diagonal Members:*

6.1.5.1 Where the fence is composed of diagonal or other angular positioned members, such as in a lattice fence, any opening created by the diagonal members shall be a maximum of 1¾ in. (4.44 cm) measured in its largest direction, to prevent toe holds. Such members should be on the side away from the ballfield.

6.1.5.2 Diagonal bracing members extending from one corner to the opposite corner, creating a ladder effect on all styles of fences and gates, are not permitted where spacing of vertical or horizontal members in any area between posts exceeds 1¾ in. (4.44 cm), in order to prevent climbing into the ballfield.

6.1.6 *Fabric or Mesh*—Mesh opening for chain-link and other fence fabrics shall be a minimum of 2-in. (5-mm) mesh, 9 gauge. All chain-link fabric shall have a knuckle and knuckle selvage and shall be selected from chain-link fabric in accordance with Specifications **A392**, **A491**, **F668**, or **F1345**. Other materials shall have blunt edges.

6.2 *Portable Outfield Fence:*

6.2.1 Portable outfield, and often sideline, fencing is generally used when it is necessary to reconfigure the playing field boundary for games in which the classification will change or when the field is to have multiple uses. The potential for injury

caused by an outfielder colliding with a fence that does not meet resiliency, break-away, or fall-down requirements is significant. The added criteria that must be considered is the stability of the cross or horizontal pieces, supports, the panel fabric opening, the vertical pieces and their give away, and the height. Portable fence systems made of specially formulated polymers in approximate 10-ft (3.05-m) lengths with break-apart connections and stable support should allow panels to release and fall down in sections when impacted. The collapsibility feature should prevent cartwheeling over the fence and allow the outfielder to be lowered to the ground in a fall. The downed panel should quickly and easily return to its original position and be snapped into place.

6.3 *Wood Outfield Fence:*

6.3.1 *Height*—The top of the fence shall conform to height for other fence types.

6.3.2 *Ground Clearance*—The clearances shall conform to prior appropriate sections to eliminate foot entrapment.

6.3.3 *Panels*—The panels should conform to prior appropriate sections with the flush side inside the playing area and shall be covered with a wall padding.

6.4 *Foul Line Fencing:*

6.4.1 *Height*—The top of the fence shall be a minimum of 96 in. to 8 ft (2.44 m) above grade measured at the side of the fence from the ballfield where any sideline obstructions exist or where objects such as other activity areas, parking lots, and so forth have to be protected.

6.4.2 *Ground Clearance*—The clearance shall conform to prior appropriate sections to eliminate foot entrapment.

6.4.3 *Panels*—The panels should conform to prior appropriate sections.

6.4.4 *Horizontal and Vertical Members*—The horizontal and vertical members shall conform to prior appropriate sections.

6.4.5 *Diagonal Members*—The diagonal members shall conform to prior appropriate sections.

6.4.6 *Fabric or Mesh*—The fabric or mesh shall conform to prior appropriate sections.

6.5 *Spectator Protective Fencing:*

6.5.1 *Height*—The top of the fence shall be a minimum of 8 ft, 0 in. (2.44 m) above grade or of a greater dimension that ensures protection of spectators from a fouled line drive or related trajectory.

6.5.2 *Ground Clearance*—The clearance shall conform to prior appropriate sections to eliminate foot entrapment.

6.5.3 *Panels*—The panels shall conform to prior appropriate sections.

6.5.4 *Horizontal and Vertical Members*—The horizontal and vertical members shall conform to prior appropriate sections.

6.5.5 *Diagonal Members*—The diagonal members shall conform to prior appropriate sections.

6.5.6 *Fabric or Mesh*—The fabric or mesh shall conform to prior appropriate sections.

6.6 *Player Bench Protective Fencing:*

6.6.1 *Height*—The top of the fence shall be a minimum of 96 in. (8 ft) (2.44 m) above grade measured at the side of the play side of the fence. For the below-grade dugouts the protective fencing should cover the entire opening from ground level to top of dugout roof or overhang.

6.6.2 *Ground Clearance*—The space from the fence bottom and ground shall conform to prior appropriate sections to eliminate foot entrapment.

6.6.3 *Panels*—The panels shall conform to prior appropriate sections.

6.6.4 *Diagonal Members*—The diagonal members shall conform to prior appropriate sections.

6.6.5 *Fabric or Mesh*—The fabric or mesh shall conform to prior appropriate sections.

6.7 *Backstop Fencing:*

6.7.1 Backstops provide a containment of pitched, thrown, and batted balls. It should delineate the spectator area from the playfield. It most often consists of three panels; one panel centered behind home plate with the other two panels located at the end of the center panel at an angle of 45° to the center panel and parallel to the foul lines.

6.7.2 Backstops should be of a protective mesh of either chain-link or synthetic net materials of a 2 in. (5 mm) mesh to prevent climbing.

6.7.3 The vertical backstop center panel for softball fields and youth baseball fields should be no less than 25 ft (7.62 m) behind home plate. The side panel should be no less than 25 ft from the foul line. The vertical backstop center panel for 90 ft (27.43 m) (bases) baseball field should be no less than 60 ft (18.28 m) behind home plate, and the distance from the ends of the backstop to the sidelines should be no less than 60 ft (18.28 m).

6.7.4 The backstop height and width may vary depending on the type of ball being played, the size and height of the spectator area around it, and other structures or objects that should be protected from foul balls, passed balls, wild pitches, and overthrows. The minimum height for backstops should be 16 ft (4.88 m). The height should be determined by the extent of protection of the spectators while standing behind it at the highest level of seating. The minimum width of the panels is dependent upon the structural design supporting the chain-link or net fabric.

6.7.5 The backstop overhang panels should be installed at the top of the center and wings of a design that meets height regulations of the game played.

6.8 *Access Gates:*

6.8.1 Double-leaf access gates shall comply with the requirements of prior appropriate sections and shall be equipped with a padlock device.

6.8.2 Single-leaf pedestrian access gates shall open outward away from the play environment, shall be self-closing, and shall have a self-latching device. The release mechanism shall be located on the side opposite of the play environment or the gate. It shall be of a height to facilitate egress/access below the top of the gate. The gate and fence shall have no opening greater than 1/2 in. (13 mm) within 18 in. (457 mm) of the release mechanism when the gate is in the fully closed position.

7. Location

7.1 *Outfield Fence*—The outfield fences are located by a radius measurement from home plate. The radius distance is determined by the level and type of ball play expected on the field and in conformance with the efforts of ASTM Committee F08 for classification of field systems. There should be no physical obstructions between the backstop and the outfield fence, light poles, and foul ball markers, and other equipment should be located outside the playing field fence.

7.2 *Foul Line Fence*—The foul line fence is designed to protect the fielder from obstructions and other sideline objects, to contain the ball and prevent spectators from intruding onto the field. The fence shall be offset to the entire foul line from a point opposite the first and third bases toward the outfield fence. The minimum distance between the foul lines and the sideline fence at the outfield fence shall be 25 ft (7.62 m) for softball fields and 60 ft (18.28 m) baseball fields. The minimum distance between the foul line opposite the bases and the fence line shall be 25 ft. (7.62 m).

7.3 *Spectator Protective Fence*—The spectator fence shall be located where spectators will congregate to watch the game or in front of bleachers of an 8 ft height or of a sufficient height to protect spectators at the highest point of the bleachers.

7.4 *Player Bench Protective Fence*—The protective fencing in front of an on-grade players bench, and below-grade dugouts, shall be a minimum of 96 in. or 8 ft (2.4 m).

7.5 *Backstop Fence*—The backstops shall conform to prior appropriate sections applicable to backstops.

7.6 *Gates*—The gates shall be placed to provide emergency and maintenance access to the field as well as for officials use and player use.

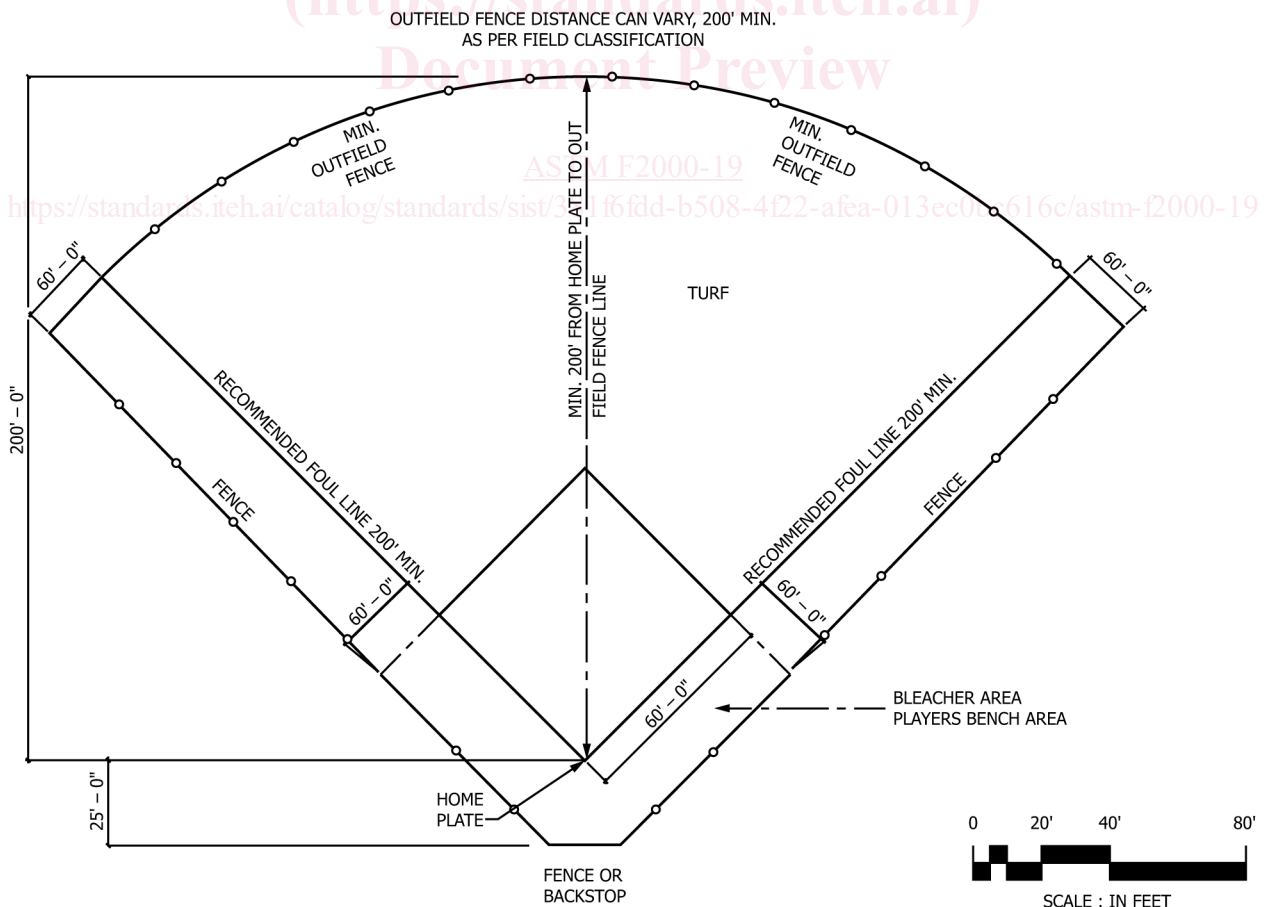


FIG. 1 Junior Baseball Field

8. Grounding

- 8.1 Grounding and bonding shall be in accordance with NFPA 70 and ANSI/IEEE C2.
- 8.2 Grounding rods shall be positioned so as not to be a hazard to ballplayers and spectators.

9. Strength

- 9.1 Post, rails, and braces for chain-link fence shall conform to strength requirements of Specification F1043 or Specification F1083 and Uniform Building Code: Chapter 23, Sec. 2303 (d).
- 9.2 All permanent fence posts shall have a design factor considering soil-bearing values and wind or earthquake forces, either acting alone or when combined with other loads.

10. Workmanship, Finish, and Appearance

- 10.1 The finished fence shall be reasonably plumb and free of defects.

11. Inspection and Certification of Raw Material

- 11.1 All tests and inspection of posts, rails, and fabrics shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.
- 11.2 Responsibility for inspection of raw materials, unless otherwise specified in the contract or purchase order, rests upon the producer. This includes performance of all inspection and test requirements specified herein.
- 11.2.1 Except as otherwise specified in the contract order, the producer may use their own or any other suitable facilities for the performance of the inspection and test requirements specified herein unless disapproved by the purchaser. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to ensure that material conforms to the prescribed requirements.

12. Rejection

- 12.1 Each length of fence received from the manufacturer may be visually inspected by the purchaser and, if it does not meet the requirements of this guide based on the inspection and test method as submitted by the producer, may be rejected and the manufacturer shall be notified. Disposition of rejected fence shall be a matter of agreement between the manufacturer/retailer and the purchaser.
- 12.2 Fence found in fabrication or installation to be unsuitable for the intended use, under the scope and requirements of this guide, may be set aside and the manufacturer notified. Such fence shall be subject to mutual investigation as to the nature and severity of the deficiency involved, and the forming or installation conditions, or both. Disposition shall be a matter for agreement.

13. Certification

- 13.1 The producer or supplier shall, upon request, furnish to the purchaser a certificate of inspection stating that the material has been sampled, tested, and inspected in accordance with the applicable specification, and has been found to meet the requirements.

14. Packaging, Marking, and Loading

- 14.1 When specified on the purchase order, packaging, marking, and loading for shipment shall be in accordance with Practices A700.

15. Keywords

- 15.1 fence; fences

1. Scope

- 1.1 This specification provides recommended minimum requirements for various types of fences used in softball and baseball ballfields and other sports facilities, and practices for installation.
- 1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.
- 1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*
- 1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*